

CLAIMS

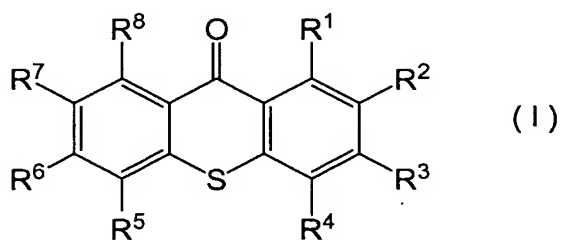
1. A photosensitive element at least comprising:

a support; and

a photosensitive resin composition layer provided on said support and composed of a photosensitive resin composition containing (A) a binder polymer, (B) a photopolymerizable compound having one or more polymerizable ethylenic unsaturated bonds in a molecule thereof, and (C) a photopolymerization initiator; wherein,

the photosensitive resin composition contains a thioxanthone-based compound represented by the following general formula (I) as the component (C):

[Chemical Formula 1]



(in formula (I), R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 and R^8 respectively and independently represent a hydrogen atom, halogen atom or hydrocarbon group), and

when the parts by weight of the thioxanthone-based compound relative to 100 parts by weight for the total weight of the component (A) and the component (B) is taken to be P, and the film thickness of the photosensitive resin composition layer is taken to be Q (μm), then R, which is the product of P and Q, satisfies the condition of the following formula (1).

$$25.5 \leq R \leq 79.0 \quad (1)$$

2. The photosensitive element according to claim 1, wherein the weight average molecular weight of the (A) binder polymer is 5,000 to 300,000.

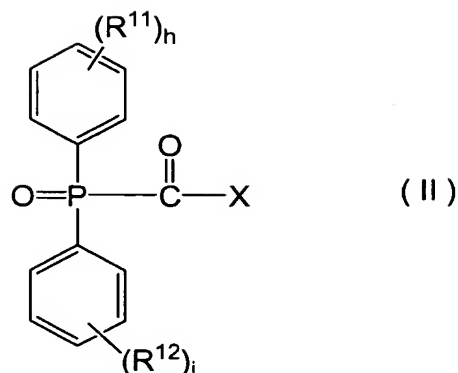
5 3. The photosensitive element according to claim 1 or 2, wherein the (B) photopolymerizable compound has a bisphenol A-type (meth)acrylate compound as an essential component thereof.

10 4. The photosensitive element according to any one of claims 1 to 3, wherein the (B) photopolymerizable compound has a compound having one ethylenic unsaturated bond in a molecule thereof and a compound having two or more ethylenic unsaturated bonds in a molecule thereof as essential components thereof.

15 5. The photosensitive element according to any one of claims 1 to 4, wherein the (C) photopolymerization initiator contains a 2,4,5-triarylimidazole dimer.

20 6. The photosensitive element according to any one of claims 1 to 5, wherein the (C) photopolymerization initiator contains an acylphosphine oxide compound represented by the following general formula (II):

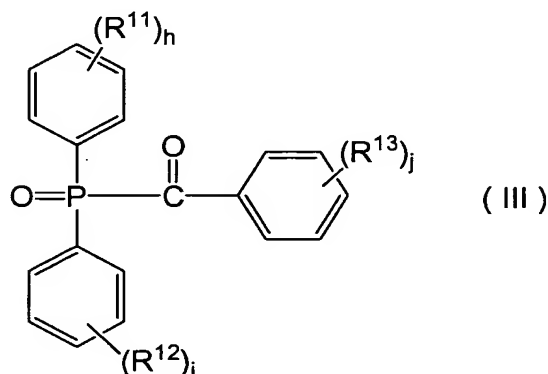
[Chemical Formula 2]



(in formula (II), X, R¹¹ and R¹² respectively and independently represent a monovalent organic group, and h and i respectively and independently represent an integer of 0 to 5).

- 5 7. The photosensitive element according to claim 6, wherein the acylphosphine oxide compound represented by the general formula (II) is an acylphosphine oxide compound represented by the following general formula (III):

[Chemical Formula 3]



10 (in formula (III), R¹¹, R¹² and R¹³ respectively and independently represent a monovalent organic group, and h, i and j respectively and independently represent an integer of 0 to 5).

8. The photosensitive element according to any one of claims 1

to 7, wherein R satisfies the condition of the following formula (2).

$$28.0 \leq R \leq 77.0 \quad (2)$$

9. The photosensitive element according to any one of claims 1 to 7, wherein R satisfies the condition of the following formula (3).

$$31.2 \leq R \leq 75.0 \quad (3)$$

10. The photosensitive element according to any one of claims 1 to 9 that is exposed to light in which the area integrated intensity a at a wavelength of 400 to 450 nm in the oscillation spectrum of a light source is 10 times or more the area integrated intensity b at a wavelength of 300 nm to less than 400 nm.

11. The photosensitive element according to any one of claims 1 to 9 that is exposed to light at a wavelength of 400 to 415 nm.

12. The photosensitive element according to any one of claims 1 to 9 that is exposed to light emitted from a gallium nitride-based semiconductor laser.

13. The photosensitive element according to any one of claims 1 to 9 that is exposed to light emitted from a blue laser.

14. The photosensitive element according to any one of claims 1 to 9 that is exposed to light in which 90% or more of light having a wavelength of 365 nm or less emitted by the light source is cut off.

15. The photosensitive element according to any one of claims 1 to 9 that is exposed by a direct writing method in which exposure light is in the form of an image by arranging a plurality of mirrors and changing the angle of each mirror as necessary.

16. A resist pattern formation method at least comprising:
a laminating step of laminating a photosensitive resin

composition layer of the photosensitive element according to any one of claims 1 to 15 on a substrate for circuit formation;

5 a exposing step of forming an exposed portion by radiating light onto a predetermined portion of the photosensitive resin composition layer; and

a developing step of removing the portion other than the exposed portion of the photosensitive resin composition layer.

10 17. A printed wiring board production method comprising: carrying out etching treatment or plating treatment on a substrate for circuit formation on which a resist pattern has been formed by the resist pattern formation method according to claim 16.